CLAIMS

WE CLAIM:

1. A method of investigating a sample which comprises at least one thin film (TF) on the surface of a substrate (SUB) with a beam of electromagnetic radiation (EMI) which impinges thereupon at an oblique angle of incidence (Θ), said method eliminating the effects of reflection from the backside (BS) of said substrate (SUB) in a beam of electromagnetic radiation (EMR) which reflects from the surface (SUR) of the at least one thin film (TF) comprising:

providing a substrate (SUB) with at least one thin film (TF) on the surface thereof, said at least one thin film (TF) presenting a surface (SUR), and

placing a mask (M) upon the surface (SUR) of the at least one thin film (TF), said mask having a hole (H) therein with an effective radius (D) which is related to the thickness (T) of the sample by the equation:

$$D <= 2T \text{ TAN } (\Theta');$$

where (T) is the combined thickness of said at least one thin film (TF) and the substrate (SUB);

causing an incident beam of electromagnetic radiation (EMI) of cross sectional diameter (BW) to impinge upon the sample thin film surface (SUR) at an oblique angle of incidence (Θ);

such that said incident electromagnetic beam (EMI) reflects from

the surface (SUR) of said at least one thin film (TF) as reflected electromagnetic beam (EMR), said reflected electromagnetic beam (EMR) having no component therein which reflected from the backside (BS) of said substrate (SUB); and

causing said reflected beam of electromagnetic radiation (EMR) to be analyzed.

2. A method of investigating a sample which comprises a substrate (SUB) with a beam of electromagnetic radiation (EMI) which impinges thereupon at an oblique angle of incidence (Θ), said method eliminating the effects of reflection from the backside (BS) of said substrate (SUB) in a beam of electromagnetic radiation (EMR) which reflects from the surface (SUR) of said substrate:

providing a substrate (SUB) presenting a surface (SUR); and

placing a mask (M) upon the surface (SUR) of said substrate, said mask having a hole (H) therein with an effective radius (D) which is related to the thickness (T) of the substrate by the equation:

$$D <= 2T \tan(\Theta');$$

where (T) is the thickness of said substrate (SUB);

causing an incident beam of electromagnetic radiation (EMI) of cross sectional diameter (BW) to impinge upon the substrate surface (SUR) at an oblique angle of incidence (Θ),

such that said incident electromagnetic beam (EMI) reflects from the surface (SUR) of said substrate as reflected electromagnetic beam (EMR), said reflected electromagnetic beam (EMR) having no

component therein which reflected from the backside (BS) of said substrate (SUB); and

causing said reflected beam of electromagnetic radiation (EMR) to be analyzed.